AMENDMENTS TO THE CLAIMS

Listing of the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1. (currently amended) A device for detecting the presence of a ligand in a sample, comprising,

a cassette having a first and a second end, and comprising an inlet port at the first end which is in fluid communication with at least one flow channel, said flow channel(s) comprising, ~~in series, at least one mixing chamber~~ one or more mixing chambers, one or more assay components, and a detection chamber delineated on at least two sides by low or non birefringent glass and in fluid communication with the ~~at least~~ one or more mixing chambers,

wherein said assay components comprise: a receptor that exhibits specificity for a ligand, a microparticle that exhibits specificity for the receptor, and a liquid crystalline material,

wherein said assay components are contained within said mixing chamber(s) or within a holding chamber in fluid communication with said mixing chamber(s),

wherein the detection chamber that is located at the second end of the cassette provides for the detection of distortion in the liquid crystalline material, and

wherein the ~~arrangement of the~~ inlet ~~outlet~~ port, the one or more mixing chambers, and the detection chamber are arranged in series, and define a substantially linear flow path from the first end to the second end of the cassette.

2. (original) The device according to claim 1, wherein the inlet port comprises a one-way valve.

3. (currently amended) The device according to claim 1, wherein the flow channel comprises in series, an inlet port, a first conduit connecting the inlet port and the mixing chamber closest to the first end, one or more mixing chambers, ~~the at least one mixing chamber, and~~ a second conduit connecting the ~~at least one~~ mixing chamber closest to the second end and the ~~at least one~~ detection chamber, and the detection chamber.

4. (currently amended) The device according to claim 1, wherein the flow channel comprises two or more mixing chambers arranged in series, wherein the ~~first~~ mixing chamber closest to the first end is in fluid communication with the inlet port, and wherein the ~~last~~ mixing chamber closest to the second end in the series is in fluid communication with the detection chamber.

5. (currently amended) The device according to claim 4, wherein the flow channel comprises two or more conduits, wherein each ~~conduit is arranged in series with the inlet port, the mixing chambers, and the detection chamber, and~~ conduit is situated between two elements of the flow channel and is in fluid communication with the elements, and wherein the elements are selected from an inlet port, one or more mixing chambers, and a detection chamber ~~either the inlet port and a mixing chamber, or two or more mixing chambers~~.

6. (original) The device according to claim 5, wherein one or more of the conduits comprise structures that induce turbulent flow when the device is in use.

7. (original) The device according to claim 6, wherein the structures that induce turbulent flow are selected from the group consisting of baffles, blades, ribs, bars and combinations thereof.

8. (original) The device according to claim 7, wherein the structures that induce turbulent flow are either moving or non-moving.

9. (currently amended) The device according to claim 1, comprising a conduit situated between a the mixing chamber closest to the second end and the detection chamber, wherein said conduit induces laminar flow when the device is in use.

10. (original) The device according to claim 9, wherein the conduit has an internal diameter that is greater than the internal diameter of the immediately adjacent mixing chamber.

11. (original) The device according to claim 4, wherein one or more of the mixing chambers comprise structures that induce turbulent flow when the device is in use.

12. (currently amended) The device according to claim 1, wherein one or both of the low or non birefringent glass walls located in the ~~mixing~~ detection chamber has longitudinal

microgrooves oriented along the axis of the cassette that bisects the first and second ends of the cassette.

13. (original) The device according to claim 1, comprising at least one polarized filter in communication with the detection chamber and located adjacent to one wall of low or non birefringent glass.

14. (currently amended) The device according to claim 1, wherein the device, when in use, provides for the flow of fluid through the flow channel from the first to the second end of the cassette, wherein the pattern of the flow of fluid ~~pattern~~ between the inlet port and the one or more mixing chambers is substantially turbulent, and wherein the pattern of the flow of fluid ~~pattern~~ between the mixing chamber closest to the second end and the detection chamber is substantially laminar.

15. (original) The device according to claim 1, wherein the cassette comprises an array of at least two flow channels.

16. (original) The device according to claim 15, wherein the cassette comprises from two to fifty flow channels.

17. (currently amended) A system for detecting the presence of a ligand in a sample, comprising:

(a) at least one assay cassette ~~the device~~ according to claim 1, ~~comprising at least one assay cassette~~; and

(b) a flow directing device in communication with the assay cassette

wherein the flow directing device, when in use, interfaces with the at least one assay cassette to initiate and direct the flow of fluid through the at least one flow channel along a substantially linear path from the first end to the second end of the at least one assay cassette.

18. (original) The system according to claim 17, wherein the at least one assay cassette comprises an array of two or more flow channels.

19. (currently amended) The system according to claim 18, wherein each of the two or more flow channels of the at least one assay cassette comprises at least one polarized filter in

contact and communication with a first side the detection chamber and located adjacent to one wall of low or non birefringent glass, and at least one polarized filter in contact and communication with a second side of the detection chamber and located adjacent to one wall of low or non birefringent glass.

20. (currently amended) The system according to claim 19, comprising, in communication with the second side of the detection chamber, a reader in contact with or in proximity to the detection chamber, wherein said reader ~~which is~~ capable of detecting light transmission through the detection chamber from a light source applied to the first side of the detection chamber.

21. (original) The system according to claim 17, wherein the flow directing device is selected from a roller, a syringe and a pump.

22. (original) The system according to claim 21, wherein the flow directing device is a roller, which, in use, contacts the first end of the at least one assay cassette and rolls over the length of the array of channels, thereby providing pressure that induces fluid flow along the length of the cassette toward the second end of the cassette.

23-40. (withdrawn)